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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/389,720	09/03/99	DICKEY	B MICRON.086A/

020995 MMC2/0815  
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EXAMINER	
MITCHELL, J	
ART UNIT	PAPER NUMBER
2822	

DATE MAILED: 08/15/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

**Office Action Summary**

Application No.

09/389,720

Applicant(s)

DICKEY, BRENTON L.

Examiner

James Mitchell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on 21 May 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. This office action is in response to the election filed May 21, 2001.

#### ***Election***

2. Claims 34-58 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 6. Applicant's cancellation of claims 35-58 and election without traverse of claims 1-34 in Paper No. 6 is acknowledged.

#### ***Drawings***

3. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).
4. The drawings of claim 24,25 and 29 are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims.
5. Therefore, the lead over chip (LOC), and lead under chip (LUC) and each plurality of a substrate unit, which includes a "pair" of adhesive tabs, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.
6. Fig. 1 is identified as a LOC assembly in Item 17, however the structure does not support that claim. There are no leads shown.

#### ***Specification***

7. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

#### ***Claim Rejections - 35 USC § 102***

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8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

9. Claims 1-7, 13, 14, 20-23, 26-28, 31-33 are rejected under 35 U.S.C. 102(e) as being anticipated by Sheppard et al. (U.S. 6,111,324).

10. Sheppard discloses a plurality of semiconductors (Fig. 8, Items 803-1,2,3,4) mounted to a flexible polyimide substrate tape (501) with cross and side bars of a carrier connected to a tape (Fig. 1, 2) whereas a first plurality of index holes or slots <sup>Fig 5</sup> (504-4) in said tape is aligned with a second plurality of index holes in said side bars (Fig. 5), the side bars (side portion of carrier) aligned to the side rails (side portions of tape), the end bars (end portion of carrier) aligned to the end rail (end portion of tape) and the cross bars (cross portions of carrier connecting to said side bars) aligned to the cross rails (cross portions of tape connecting to said side rails), the tape which is inherently a thin film is electrically connected to dies (Fig. 8) via wire bonds, and a plurality of substrate units grouped as substrate sets which are defined by the enclosed cavity area (101-1,2,3,4) which interface with a plurality of dies (Fig. 8,9) where said carrier adds material at a selected region by placement of its cross and side bars, three substrate sets (101-1,2,3) with a plurality of cross bars located near the sets, as said bars define the set regions (Fig. 1), and an encapsulant (802) to form a BGA (Line 34, Column 4).

***Claim Rejections - 35 USC § 103***

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11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 8-10, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sheppard as applied to claim 7 and further in view of Beck et al. (U.S. 5,980,683).

13. Sheppard does not disclose a carrier being a BT resin or a Polyimide, however Beck teaches a carrier comprising a BT resin or a Polyimide (Lines 19-21, Column 7).

14. It would have been obvious to one of ordinary skill in the art to modify the layers of material which are on the tape of Sheppard that form the first and second side bars of the carrier with either a polyimide or a BT resin, since polyimide and resin are well known materials in the art for use in reinforced substrates.

15. Claims 11 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sheppard as applied to claim 7 and further in view of Long et al. (U.S. 5,023,202).

16. Sheppard does not disclose copper side and cross bars on a film, however Long utilizes copper side and cross bars on a film (Fig. 1).

17. It would have been obvious to one of ordinary skill in the art to incorporate a copper side or cross bar with the tape of Sheppard in order to increase mechanical rigidity as taught by Long (Abstract).

18. Claims 12 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sheppard as applied to claim 7 and further in view of Park (JP 11176886).

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19. Sheppard does not disclose side or cross bars as a solder resist, however Park utilizes a solder resist (Fig. 1,2, Items 6,8) as a side and cross bar defined by the resist layer being a side bar in the vertical direction and said cross in the horizontal direction formed on a tape.

20. It would have been obvious to one of ordinary skill in the art to incorporate a solder resist cross bars with the tape of Sheppard in order to prevent warping as taught by Park (Abstract).

21. Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sheppard in view of Farnwoth (U.S 5,286,679).

22. Sheppard discloses elements stated in paragraph 9, but does not disclose a lead over chip (LOC) or a lead under chip (LUC), however Farnworth teaches the use of LOC and LUC (Lines 60-64, Column 4).

23. It would have been obvious to one of ordinary skill as well known in the art to form the structure either as a LUC or LOC since both structures are common mountings in the semiconductor art.

24. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sheppard as applied to claims 20 and further in view of Froebel et al. (U.S 5,585,600).

25. Sheppard does not show a plurality of substrate units with a plurality of index holes, however Froebel utilizes a plurality of index holes (Fig.1)

26. It would have been obvious to one of ordinary skill in the art to incorporate a plurality of index holes, since it has been held that mere duplication of essential parts of

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the device involve only routine skill in the art. *In re Harza* 124 U.S.P.Q 378 (CCPA 1960).

### **Conclusion**

27. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Long '766 (U.S 5,173,766), Ball (U.S 6,097,098), Lin et al. (U.S 5,216,278).

The prior art discloses in Long '766 the use of a plurality of index holes in tapes, in Ball the use of LOC and LUC in the semiconductor art, and in Lin the use of multi layer carrier.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Mitchell whose telephone number is (703) 305-0244. The examiner can normally be reached on M-F 10:30-8:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on (703) 308-4083. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 305-3230 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

  
**CARL WHITEHEAD, JR.**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2800**

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jmm

August 13, 2001